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The author believes that some metabolism goes on during the dry condition. The evidence for this lies in the fact that food granules in intestinal cells disappear during desiccation in a manner similar to that seen in starving specimens.

It is suggested that the movement of the chromatin to the periphery of the nucleus during desiccation facilitates cell oxidations during the period. Their change in position takes place at the very beginning of the drying process. On recovery from desiccation the changes are the reverse of those described above.

The acceleration of reproductive activity often noted in rotifers soon after recovering from drying is credited to an increase in ovarian nuclei that occurs during the period of recovery. When death results from desiccation any of the following causes may operate:—mechanical injury due to too rapid drying; starvation due from a lack of reserve food material; poisonous effects of metabolic products; insufficient time during early drying to allow the nucleocytoplasmic reorganization.

THE FUNDUS OCULI OF BIRDS

In a most attractive atlas Dr. Wood has presented the results of his studies upon representatives of all the leading orders of birds, including more than 100 species. He rightly takes the view that a group of animals with such highly developed and varied vision as birds offers a most fruitful field for the study of all the elements entering into the structure and activity of the eyes.

His method provides for study with the self-luminous ophthalmoscope, macroscopic examination of excised eyes, and microscopic examination of special portions. Owing to the fact that the mydriatics usually used for man have little or no direct effect on the sphincter iris musculature of the bird, it was found necessary to secure dilation by the use of such agents as galvanism, nicotine, curare, and of drugs that render the bird unconscious without actually killing it. It was also found that maximum dilation is to be had a few moments before and after the death of birds, where these are being killed for detailed studies of eye-structure.

The evidences are abundantly manifest of close and effective cooperation between the author and the artist, Mr. Arthur Head of London, in the remarkable series of colored plates of some 58 species of birds and 3 species of reptiles, not to mention more than 100 black and white drawings.

The chief variable features of the fundus oculi capable of study by their combination of methods are:—the color and form of the internal background; the shape, size, and degree of development of the pecten; the optic nerve entrance; the choroidal and retinal blood vessels; the details of distribution of the retinal elements, including the opaque nerve fibres; the shape and size of the optic discs or areas of acute vision.

Some of the outstanding conclusions of the author are:—

1. Such examination of the fundus as has been indicated furnish very different and characteristic fundus pictures for different groups of birds; sufficiently so in many cases for the immediate recognition of the species. These fundus pictures will rank with other taxonomic indicia in classification. The author is able to suggest certain broad classifications of fundi.

2. There is great variety among birds in respect to the size, shape, and position of the areas of distinct vision. This localization corresponds strikingly with the habitats and habits of the birds,—especially to manner of getting food, escape from enemies, migration, reproduction, etc.

3. Domestication or prolonged captivity seems to bring changes in the eye of birds. These abnormalities include choroidal diseases, opaqueness of media, less constancy in many of the variable elements of the fundus.

4. Study of the fundus of birds in comparison with those of other vertebrates may be expected to throw light upon the origin and kinship of the group.

The chapters are:—1. Introduction; 2. Summary of Conclusions; 3. Collection, Selection, and Preparation of Material; 4. Review of Anatomy and Physiology of the Fundus Organs; 5. Ophthalmoscopy; 6. Ophthalmoscopy of the Fundus in Living Birds; 7. Macroscopic Appearances; 8. Effects of Domestication on the

Fundus Oculi; 9. Appearance of the Fundus Oculi in Various Orders of Birds; 10. Classification of Ocular Fundi; 11. Ocular Fundus in Relation to Classification of Aves; 12. Relation of Reptilian to Avian Fundi; 13. Atlas of Colored Plates of Fundus Oculi in Birds.

The mechanical and artistic qualities of the book are of the first rank. It is an ungracious thing to refer to small matters of incompleteness where the larger things are so painstakingly and admirably cared for. There is, however, incompleteness and lack of uniformity in the use of subdivision headings and numerals in Chapter VI particularly, and a lack of correspondence between these and the table of contents.

The Fundus Oculi of Birds, Especially as Viewed by the Ophthalmoscope, by Casey Albert Wood. Illustrated by 145 text drawings, and 61 colored plates. The Lakeside Press, Chicago, 1917. Price \$15.